

REMARKS

Claims 32-35 stand rejected under 35 USC § 102(b) as anticipated by Kelly U.S. Patent No. 4,978,640 (see pp. 2 of the official action).

The official action points out that Kelly '640 discloses a product formed by firing a mixture of feldspar and alumina having specified particle sizes, and that the “composite material” is useful as a dental prosthesis or dental restoration.

The rejection is traversed. The claims are not anticipated because Kelly '640 (a) does not disclose production of a ceramic and (b) does not disclose a ceramic made from metal oxide powder.

The article disclosed in Kelly '640 is not a ceramic. Instead, as recognized by the official action, it is a “composite material.” A ceramic, as described in the accompanying entry from the encyclopedia of chemistry “Chemie” published by VEB F.A. Brockhaus Verlag, p. 565-566 (and English-language translation), are materials which “consist mostly or completely of a crystalline phase.” In contrast, the composite of Kelly '640 is predominantly an amorphous material – glass (see column 1, lines 55-58, specifying that the volume fraction of the filler is less than 1). Tellingly, and accurately, nowhere does Kelly refer to the material as a ceramic. Instead, Kelly calls the material a “composite” (see, e.g., the title) or a “sintered composite” (see, e.g., column 1, lines 59-61).

As described in the accompanying entry from the chemical encyclopedia “Chemie,” ceramics obtain their characteristic properties during material conversions at high temperature.” In contrast, Kelly '640 describes that in “[d]ispersion-strengthened composites . . . crystalline reinforcement particles, e.g., alumina or zirconia, are dispersed throughout a glass matrix, e.g., a feldspathic glass. The crystalline particles improve the elastic modulus, strength, and toughness of the glass; the degree of improvement is related to the volume fraction and particle size of reinforcement added” (column 1, lines 7-10). The ceramic materials of the invention and the composites of Kelly '640 are quite different, because the alumina powder is dispersed in the composite, whereas the metal oxide powders are agglomerated in the crystalline ceramic. A similar effect cannot be expected.

The article disclosed in Kelly '640 also is not "made of metal oxide powder" as presently claimed. Oxides are defined as binary compounds of oxygen. See the accompanying entry from the Encyclopedia of chemistry "Lexikon der Chemie" published by Spektrum Akademischer Verlag, p.449-450, and English-language translation. Metal oxides are binary compounds of oxygen with a metal. An aluminosilicate like feldspar may not be considered as a metal oxide, because it is not a binary compound of oxygen with a metal. Instead it comprises not only oxygen and aluminum but also silicon and other elements like potassium. As Kelly does not a ceramic made of first and second metal oxide powders, it does not anticipate.

Moreover, Kelly '640 does not suggest the importance and advantages of a particular size ratio below 40:1 or in the range of 12.4:1 to 40:1. Actually, Kelly '640 teaches that the particle size ratio may be between 0.14:1 and 1000:1, as can be calculated from the diameter ranges for the glass forming particles, 0.1 μm to 10 μm , and for the filler particles 0.01 μm to 0.7 μm . Choosing a very small part of this very broad particle size ratio range, however, leads to special advantages during the processing for producing the ceramic dental materials, while also allowing to obtain translucent materials, as described in the application.

Accordingly, Kelly '640 lacks at least two elements of the claims, and cannot be considered to anticipate. Furthermore, Kelly '640 provides no motivation to make a ceramic. The claims are in compliance, and allowance is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form or procedure in an effort to advance this application to allowance, the examiner is urged to telephone the undersigned attorney at the indicated number.

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Respectfully submitted,

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